

**Notice of Allowability**

Application No.

10/706,690

Applicant(s)

ANDREWS, JEFFREY A.

Examiner

Sajous Wesner

Art Unit

2676

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment of September 26, 2005.
2. ☒ The allowed claim(s) is/are 1-11, 14-17, 22-29 and 32-52.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 11/12/2003
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### DETAILED ACTION

This communication is responsive to the amendment and response dated September 26, 2005. Claims 1-11, 14-17, 19-29, and 32-52 are presented for examination.

#### *Allowable Subject Matter*

1. Claims 1-11, 14-17, 19-29, and 32-52 are allowed over the prior art.

#### Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance:

The present invention is directed methods and systems for transparent depth sorting, wherein multiple depth buffers are utilized to sort depth data associated with multiple transparent pixels that overlie one another in back to front order. The sorting of the depth data enables identification of an individual transparent pixel that lies closest to an associated opaque pixel.

The best prior art of record, the Duluk (US 6476807) reference teaches a system for transparent depth sorting wherein multiple depth buffers are utilized to sort depth data associated with multiple transparent pixels that overlie one another in back to front order. See col. 32, line 55 to col. 33, line 41. However, Duluk fails to teach sorting, using multiple depth buffers, depth data associated with multiple transparent pixels that overlie one another to identify an individual pixel that lies closest to an associated opaque pixel, wherein **the sorting comprises flipping which of the multiple buffers**

is considered as a destination buffer and a source buffer (as recited in claims 1, 9); rendering at least one opaque pixel and identifying a transparent pixel that lies along a ray and computing transparency effects of the identified transparent pixel relative to the opaque pixel by utilizing two physical depth buffers for sorting depth data associated with the transparent pixels, and wherein the two depth buffers are flipped (as recited in claim 11). Also, the Duluk reference fails to teach the means for rendering at least one opaque pixel and identifying a transparent pixel that lies along a ray and computing transparency effects of the identified transparent pixel relative to the opaque pixel, and means for identifying, in a back-to-front manner, additional transparent pixels and successively computing transparency effects for the additional transparent pixels, wherein the means for identifying comprises a pair of physical depth buffers that can be logically flipped (as recited in claim 28); a transparent depth sorting component comprising at least two physical depth buffers a writeback counter to count writebacks that occur to at least one of the two physical depth buffers; and a comparison logic that is configured to effect sorting using the two physical depth buffers, computing a transparency effect of identified pixel relative to associated opaque pixel, and computing, for the next closest pixel, a transparency effect relative to the transparency effect that was computed (as recited in claim 32); mapping a first of two depth buffers as a destination buffer that is readable and writable, a second of depth buffers being designated as a source buffer that is only readable (as recited in claims 41 & 49 in conjunction with the other limitations in

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the claims). For the aforementioned reasons, the limitations of claims 1-18 are allowed over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sajous Wesner whose telephone number is 571-272-7791. The examiner can normally be reached on Mondays thru Fridays between 10:30 and 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesner Sajous

11/30/05

*Matthew C. Bella*

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600